

## ABSTRACT

A tilt compensator and delay element for use in an interferometer. The interferometer can be a scanning or a non-scanning interferometer. For example, the interferometer can be a Michelson-Morley interferometer or a Mach-Zehnder interferometer having a scanning mirror. The tilt compensator and delay element removes the tilt effects of the scanning mirror in two axes. The interferometer receives light and passes the light through a beam splitter. The light passed through the beam splitter is reflected by at least two mirrors. The beam splitter and the mirrors are positioned in a first plane.

The tilt compensator and delay element of the present invention is provided with an odd number of mirrors. The odd number of mirrors includes at least three mirrors. For example, the odd number of mirrors in the tilt compensator and delay element can include three mirrors, five mirrors, seven mirrors, nine mirrors, etc. The mirrors of the tilt compensator and delay element are positioned so as to receive the light, reflect the light out of the first plane, and reflect the light back into the first plane so as to provide tilt correction and to delay the light.